FIG. 1

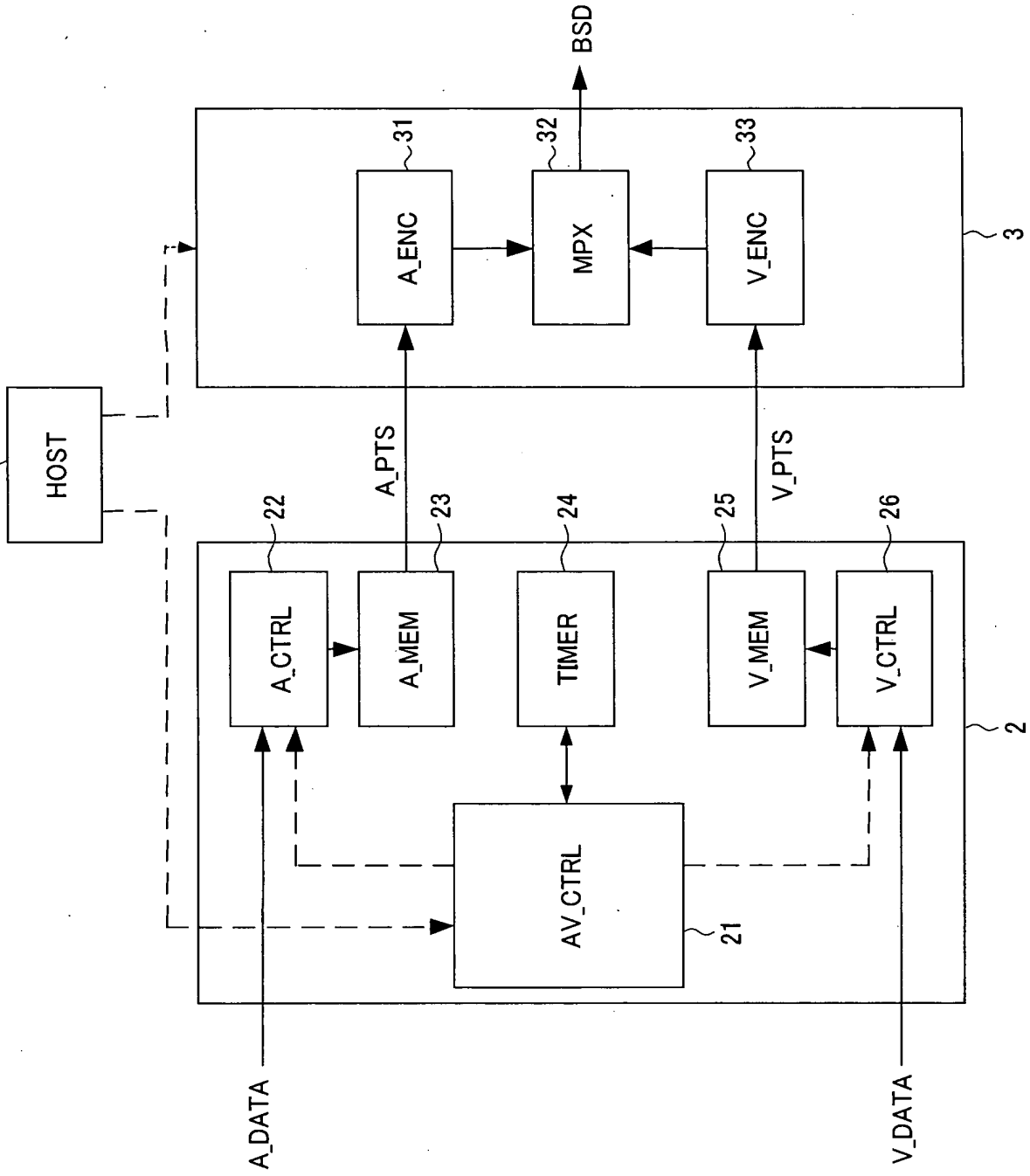

HOST
1
BSD
A_ENC
31
MPX
32
V_ENC
33
3
A_PTS
V_PTS
22
23
24
25
26
A_CTRL
A_MEM
TIMER
V_MEM
V_CTRL
AV_CTRL
21
2
A_DATA
V_DATA

FIG. 2

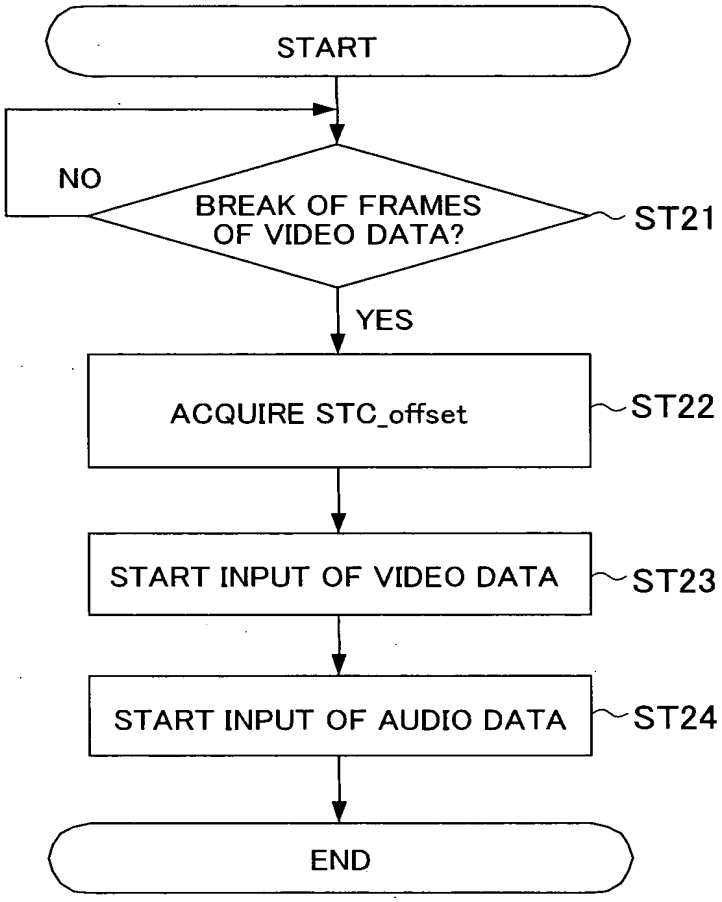

START
NO
BREAK OF FRAMES OF VIDEO DATA?
ST21
YES
ACQUIRE STC_offset
ST22
START INPUT OF VIDEO DATA
ST23
START INPUT OF AUDIO DATA
ST24
END

FIG. 3

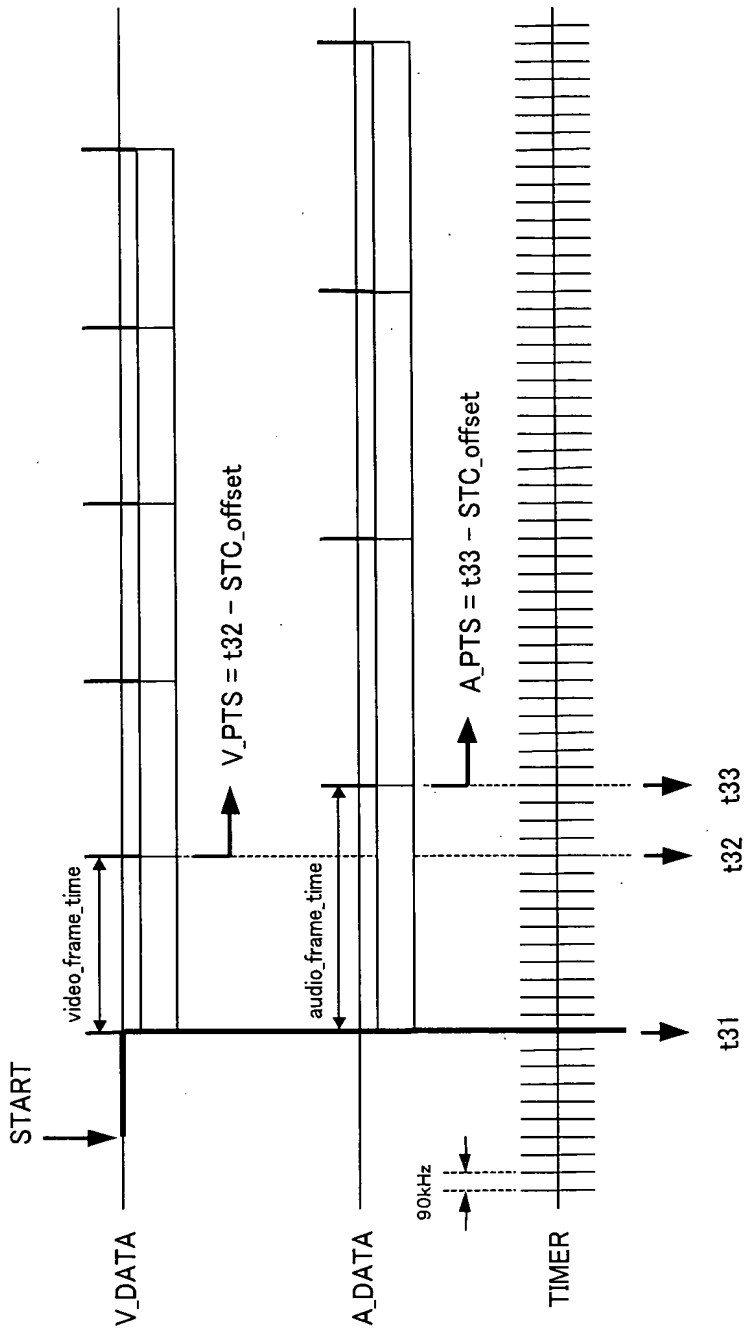

START
V_DATA
A_DATA
TIMER
video_frame_time
audio_frame_time
90kHz
V_PTS = t32 - STC_offset
A_PTS = t33 - STC_offset
t31
t32
t33

FIG. 4

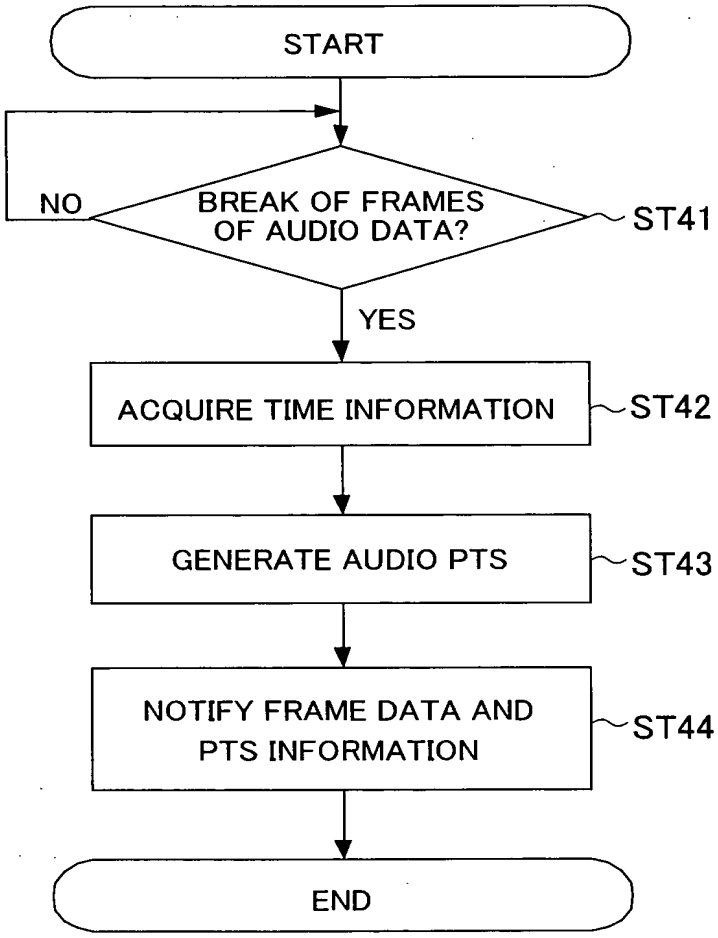

START
NO
BREAK OF FRAMES OF AUDIO DATA?
ST41
YES
ACQUIRE TIME INFORMATION
ST42
GENERATE AUDIO PTS
ST43
NOTIFY FRAME DATA AND PTS INFORMATION
ST44
END

FIG. 5

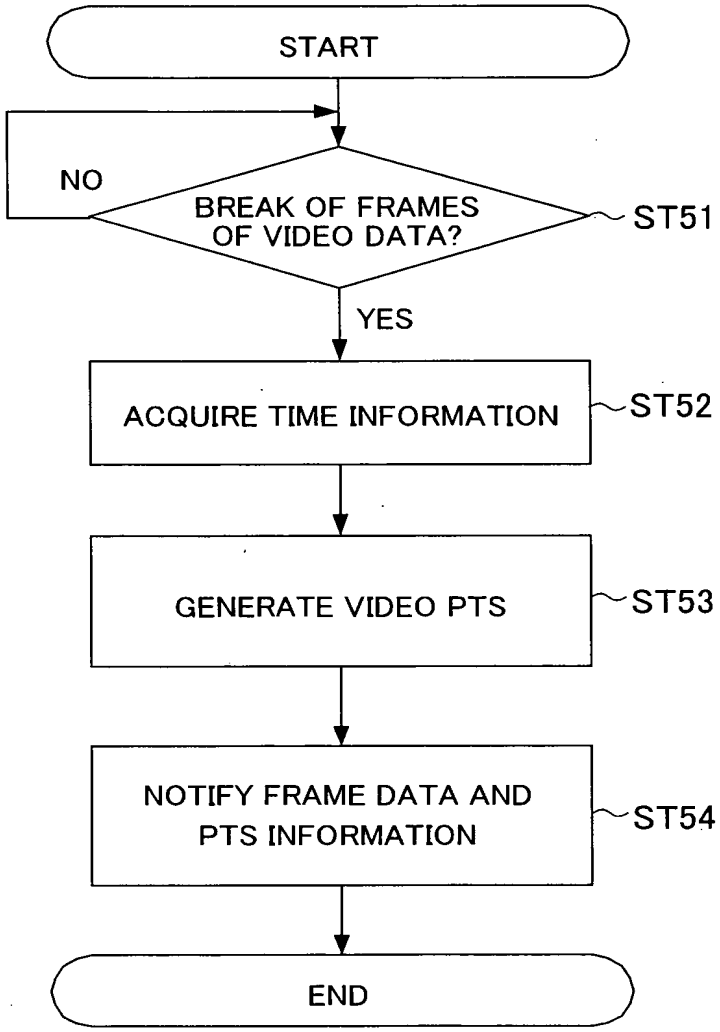

START
NO
BREAK OF FRAMES OF VIDEO DATA?
ST51
YES
ACQUIRE TIME INFORMATION
ST52
GENERATE VIDEO PTS
ST53
NOTIFY FRAME DATA AND PTS INFORMATION
ST54
END

FIG. 6

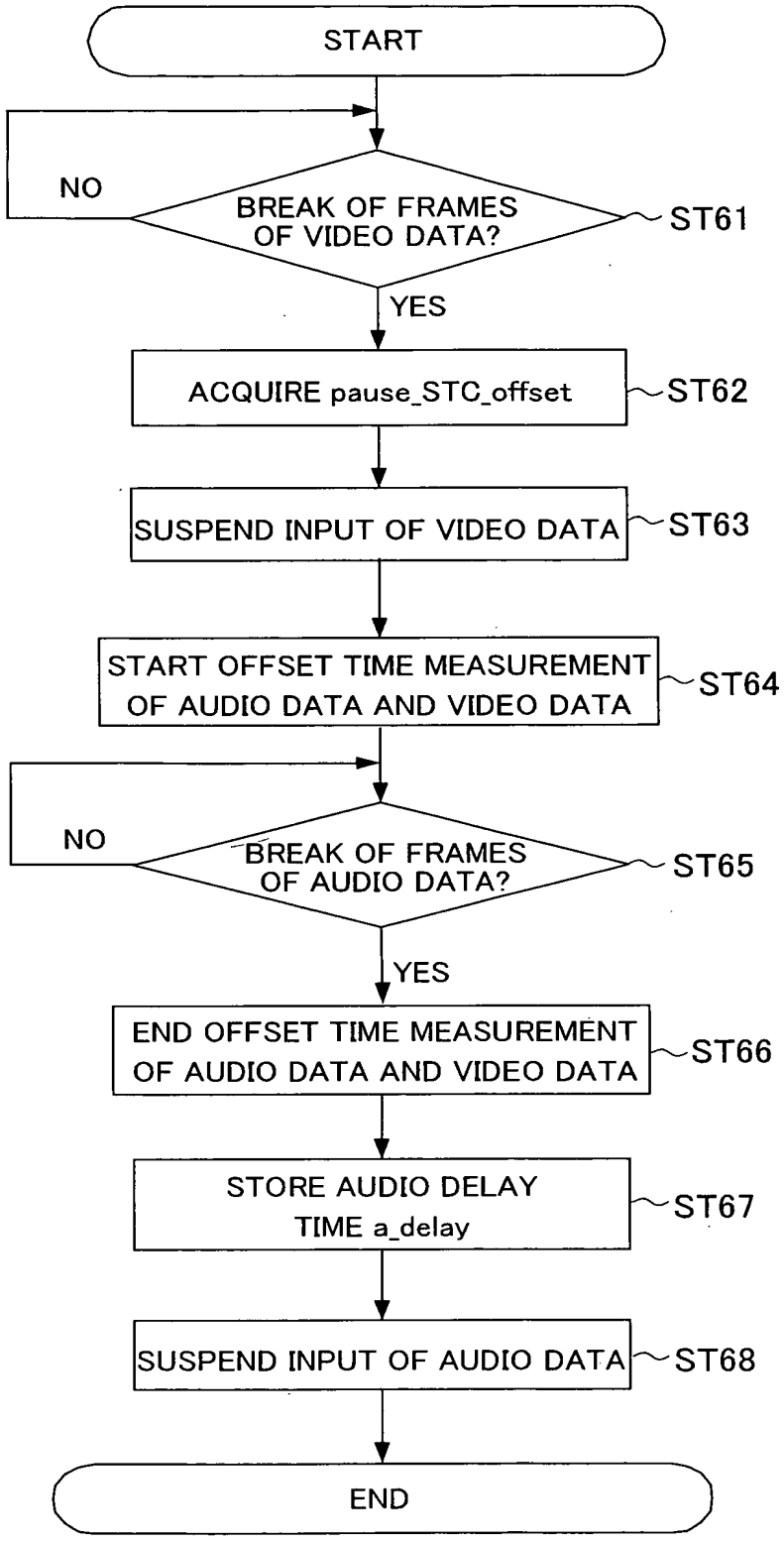

START
NO
BREAK OF FRAMES OF VIDEO DATA?
ST61
YES
ACQUIRE pause_STC_offset
ST62
SUSPEND INPUT OF VIDEO DATA
ST63
START OFFSET TIME MEASUREMENT OF AUDIO DATA AND VIDEO DATA
ST64
NO
BREAK OF FRAMES OF AUDIO DATA?
ST65
YES
END OFFSET TIME MEASUREMENT OF AUDIO DATA AND VIDEO DATA
ST66
STORE AUDIO DELAY TIME a_delay
ST67
SUSPEND INPUT OF AUDIO DATA
ST68
END

FIG. 7

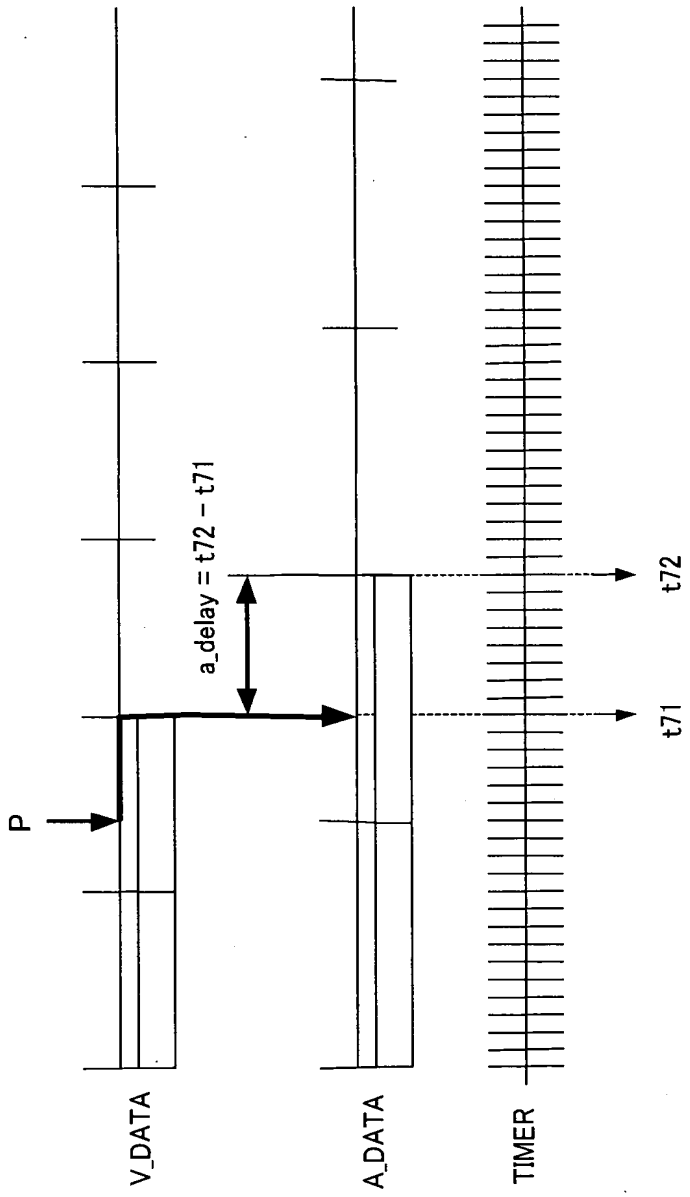


FIG. 8

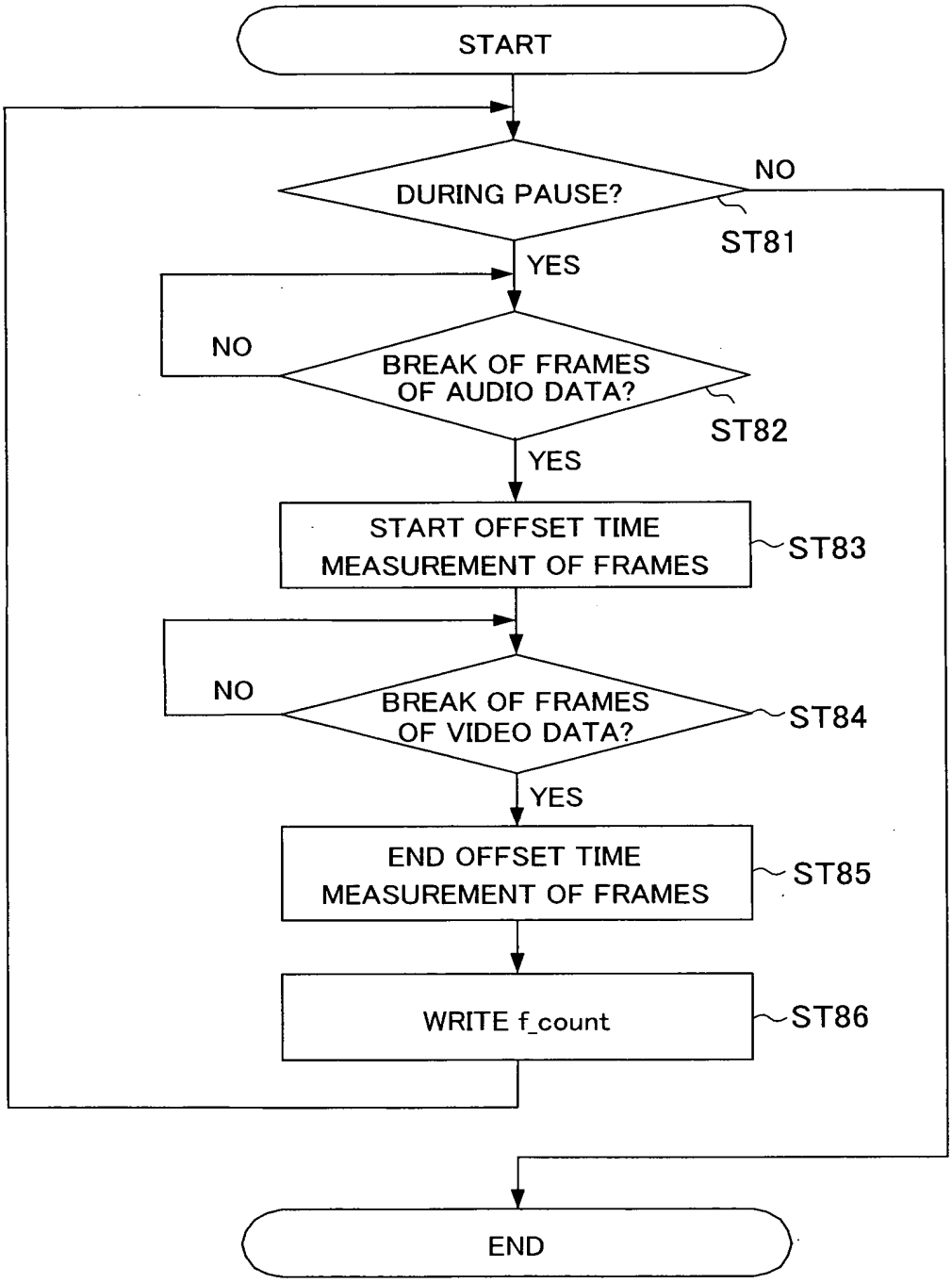

START
DURING PAUSE?
NO
ST81
YES
NO
BREAK OF FRAMES OF AUDIO DATA?
ST82
YES
START OFFSET TIME MEASUREMENT OF FRAMES
ST83
NO
BREAK OF FRAMES OF VIDEO DATA?
ST84
YES
END OFFSET TIME MEASUREMENT OF FRAMES
ST85
WRITE f_count
ST86
END

FIG. 9

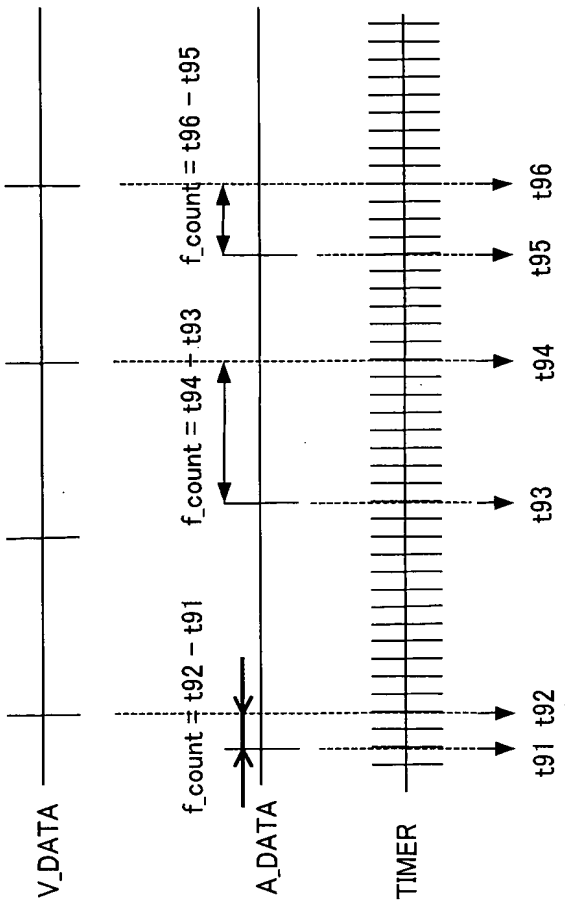

V_DATA
A_DATA
TIMER
f_count = t92 − t91
f_count = t94 + t93
f_count = t96 − t95
t91 t92
t93
t94
t95
t96

FIG. 10

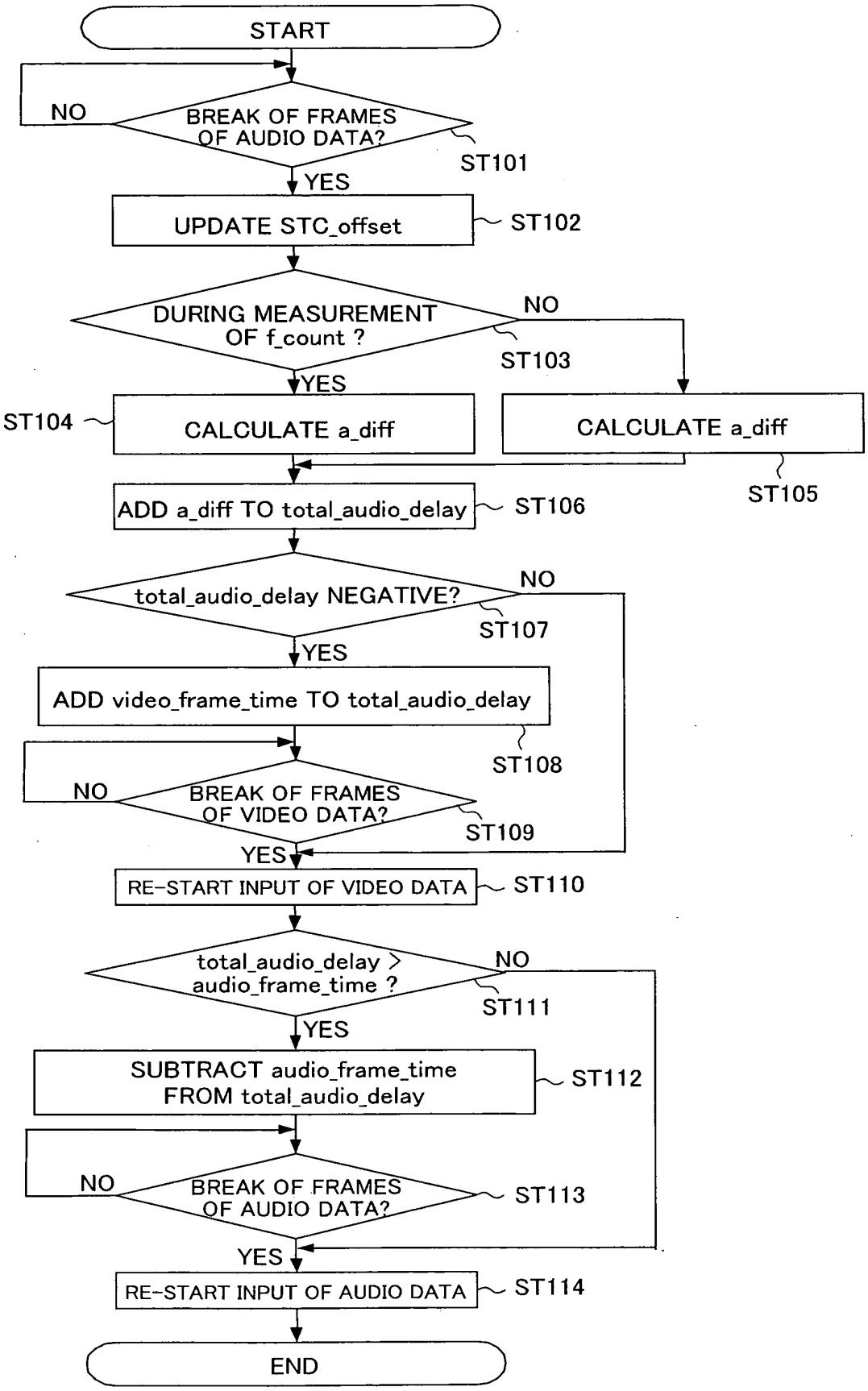

START
BREAK OF FRAMES OF AUDIO DATA?
NO
YES
ST101
UPDATE STC_offset
ST102
DURING MEASUREMENT OF f_count ?
NO
YES
ST103
ST104
CALCULATE a_diff
CALCULATE a_diff
ST105
ADD a_diff TO total_audio_delay
ST106
total_audio_delay NEGATIVE?
NO
YES
ST107
ADD video_frame_time TO total_audio_delay
ST108
BREAK OF FRAMES OF VIDEO DATA?
NO
YES
ST109
RE-START INPUT OF VIDEO DATA
ST110
total_audio_delay > audio_frame_time ?
NO
YES
ST111
SUBTRACT audio_frame_time FROM total_audio_delay
ST112
BREAK OF FRAMES OF AUDIO DATA?
NO
YES
ST113
RE-START INPUT OF AUDIO DATA
ST114
END

FIG. 11

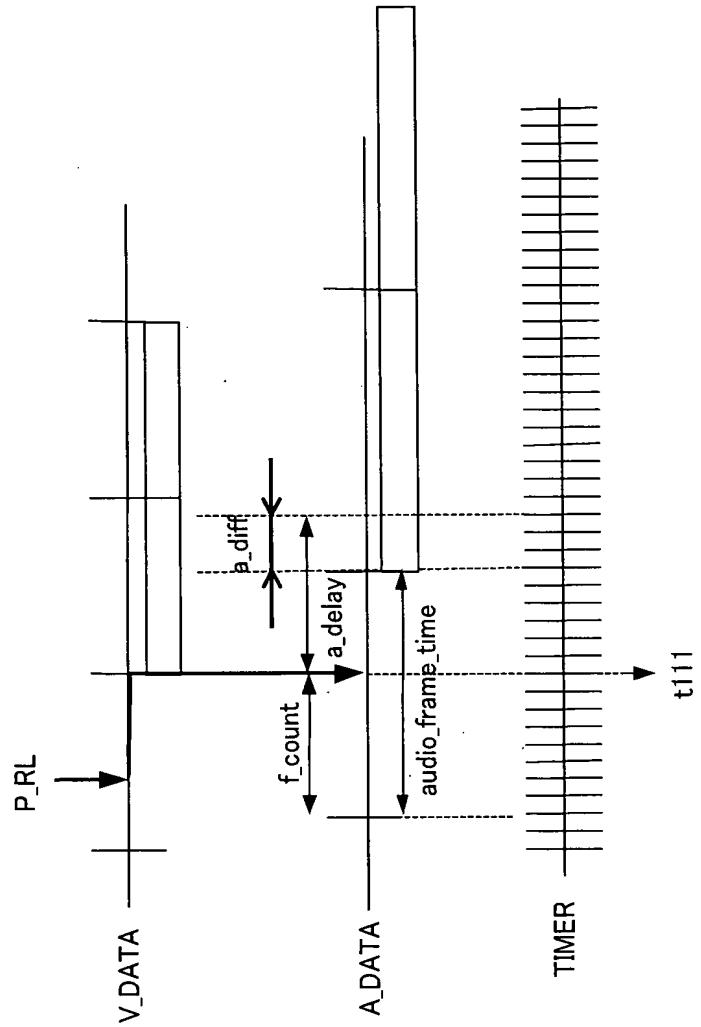

P_RL
V_DATA
f_count
a_diff
a_delay
A_DATA
audio_frame_time
TIMER
t111

FIG. 12

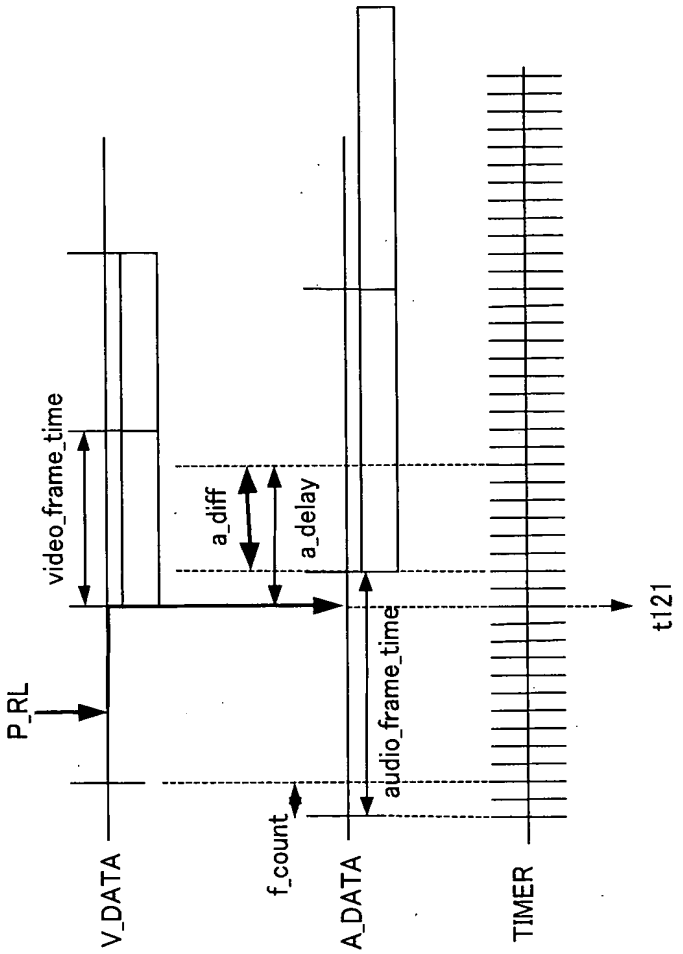

video_frame_time
a_diff
a_delay
P_RL
audio_frame_time
t121
V_DATA
f_count
A_DATA
TIMER

FIG. 13

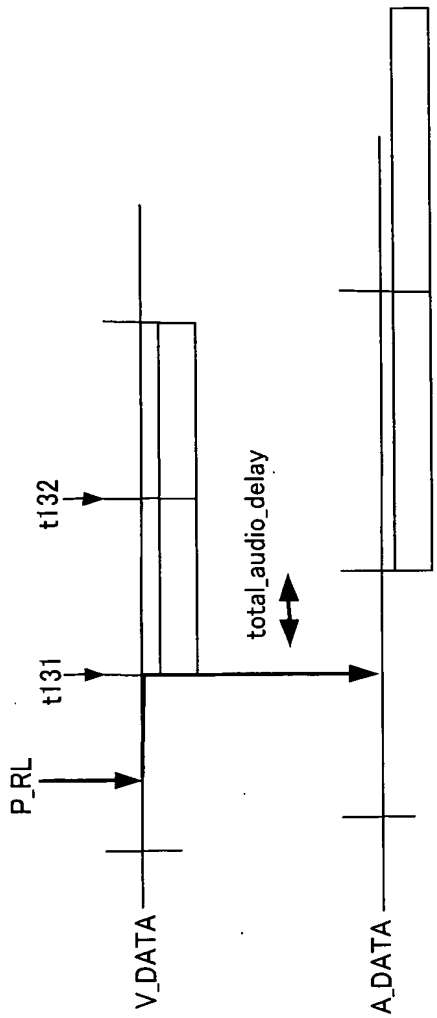


FIG. 14

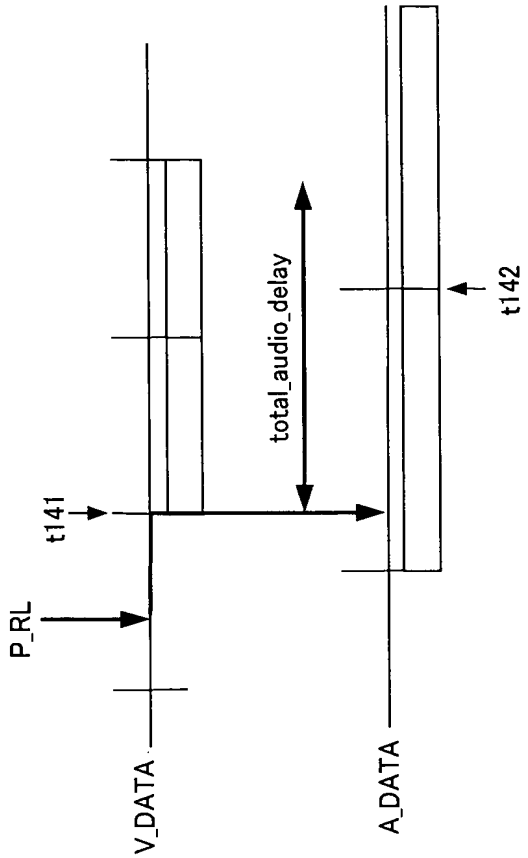


FIG. 15

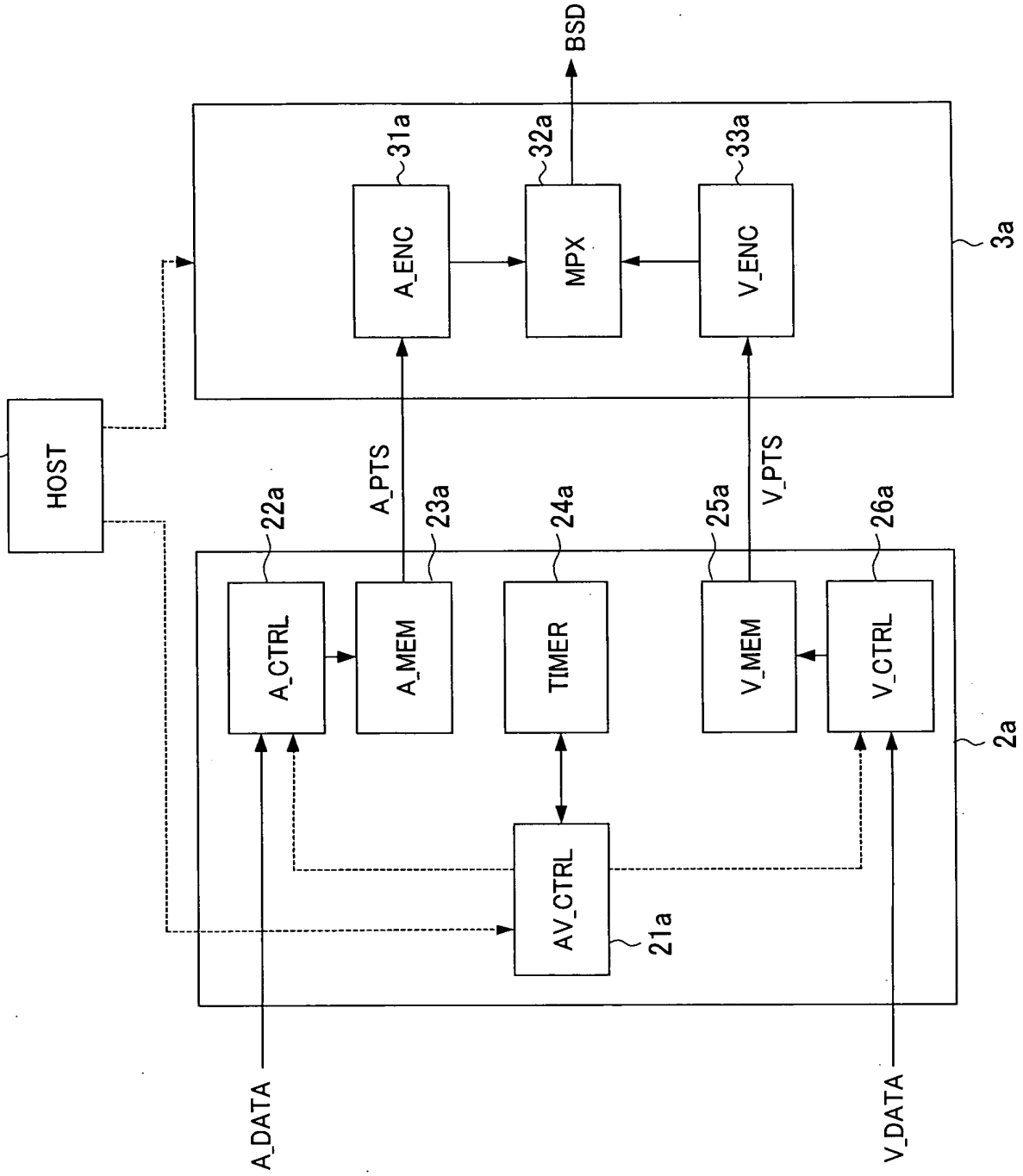
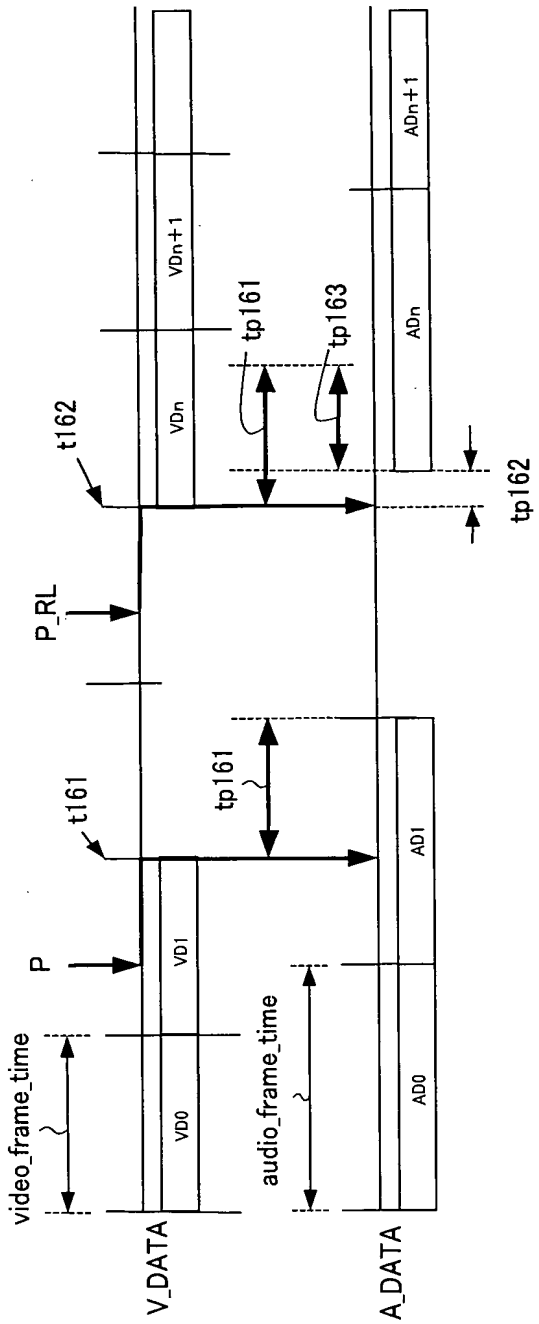

1a
HOST
BSD
31a
32a
33a
A_ENC
MPX
V_ENC
3a
A_PTS
V_PTS
22a
23a
24a
25a
26a
A_CTRL
A_MEM
TIMER
V_MEM
V_CTRL
2a
AV_CTRL
21a
A_DATA
V_DATA

FIG. 16


V_DATA
A_DATA
video_frame_time
audio_frame_time
P
P_RL
t161
t162
tp161
tp162
tp163
VD0
VD1
VDn
VDn+1
AD0
AD1
ADn
ADn+1

LIST OF REFERENCES

1, 1a... host

2, 2a... data controller

21, 21a... audio/video controller (AV controller)

22, 22a... audio controller

23, 23a... audio data memory

24, 24a... timer

25, 25a... video data memory

26, 26a... video controller

3, 3a... system encoder

31, 31a... audio encoder

32, 32a... multiplexer

33, 33a... video encoder